

SEQUENCE LISTING

<110> David Malcolm Duckworth
David Michalovich

<120> NOVEL USE

<130> GP-30003-D2

<140> TO BE ASSIGNED
<141>

<150> US 09/566,825
<151> 2000-05-08

<150> US 09/107,847
<151> 1998-06-30

<150> EP 97304996.8
<151> 1997-07-08

<160> 2

<170> FastSEQ for Windows Version 3.0

<210> 1
<211> 5715
<212> DNA
<213> HOMO SAPIENS

<400> 1

agctgattct	atcacattgt	aagatgcctt	tggataattc	tacagtcctc	ttaaatgaat	60
ctttagaact	tggcaagtct	cactagatac	cttcaatcat	cattttgagc	tcaaagaatt	120
ctgagactta	tgggttggtca	tatagaagag	gaccttgaac	ctatagtttc	ctgaagaatc	180
agttttaaag	atccaaggag	tacaaaagga	gaagtacaaa	tgtctactac	aagacgaaaa	240
cgtagtatgt	tatgtttgtt	accgtaagct	gtagtaaaat	gagctcgatt	gttgacagag	300
atgacagtag	tatttttgat	gggttggtgg	aagaagatga	caaggacaaa	gcgaaaagag	360
tatctagaaa	caaactctgaa	aagaaacgta	gagatcaatt	taatgttctc	attaaagaac	420
tgggatccat	gcttcctggt	aatgctagaa	agatggacaa	atctactggt	ctgcagaaaa	480
gcattgattt	tttacgaaaa	cataaagaaa	tcactgcaca	gtcagatgct	agtgaatttc	540
gacaggactg	gaaacctaca	ttccttagta	atgaagagtt	tacacaatta	atgttagagg	600
ctcttgatgg	ttttttttta	gcaatcatga	cagatggaag	cataatatat	gtgtctgaga	660
gtgtaacttc	attacttgaa	catttaccat	ctgatcttgt	ggatcaaagt	atattttaatt	720
ttatcccaga	aggggaacat	tcagagggtt	ataaaaatact	ctctactcat	ctgctggaaa	780
gtgattcatt	aaccccagaa	tattttaaatt	caaaaaatca	gttagaattc	tgttgtcaca	840
tgctgcgagg	aacaatagac	ccaaaggagc	catctaccta	tgaatatgta	aaatttatag	900
gaaatttcaa	atcttttaaac	agtgtatcct	cttcagcaca	caatgggttt	gaaggaacta	960
tacaacgcac	acataggcca	tcttatgaag	atagagtttg	ttttgtagct	actgtcaggt	1020
tagctacacc	tcagttcatc	aaggaaatgt	gcactggtga	agaacccaat	gaagagttta	1080
catctagaca	tagtttagaa	tggaaagtttc	tgttttctaga	tcacagggca	ccaccataa	1140
tagggatatt	gccatttgaa	gttctgggaa	catcaggcta	tgattactat	catgtggatg	1200
acctagaaaa	tttggaacaaa	tgtcatgagc	acttaatgca	atatgggaaa	ggcaaatcat	1260
gttattatag	gttcctgact	aaggggcaac	agtggatttg	gcttcagact	cattattata	1320
tcacttacca	tcagtggaat	tcaaggccag	agtttattgt	ttgtactcac	actgtagtaa	1380
gttatgcaga	agttagggct	gaaagacgac	gagaacttgg	cattgaagag	tctcttcctg	1440

agacagctgc	tgacaaaagc	caagattctg	ggtcagataa	tcgtataaac	acagtcagtc	1500
tcaaggaagc	attggaaagg	tttgatcaca	gcccaccccc	ttctgcctct	tctcggagtt	1560
caagaaaatc	atctcacacg	gccgtctcag	acccttcctc	aacaccaacc	aagatcccga	1620
cggatacag	cactccaccc	aggcagcatt	taccagctca	tgagaagatg	gtgcaaagaa	1680
ggtcattcatt	tagtagtcag	tccataaatt	cccagctctg	tggttcatca	ttaacacagc	1740
cagtgatgtc	tcaagctaca	aattttaccaa	ttccacaagg	catgtcccag	tttcagtttt	1800
cagctcaatt	aggagccatg	caacatctga	aagaccaatt	ggaacaacgg	acacgcatga	1860
tagaagcaaa	tattcatcgg	caacaagaag	aactaagaaa	aattcaagaa	caacttcaga	1920
tggtccatgg	tcaggggctg	cagatgtttt	tgcaacaatc	aaatcctggg	ttgaattttg	1980
gttccgttca	actttcttct	ggaaattcat	ctaactcca	gcaacttgca	cctataaata	2040
tgcaaggcca	agttgttctt	actaaccaga	ttcaaagtgg	aatgaatact	ggacacattg	2100
gcacaactca	gcacatgata	caacaacaga	ctttacagag	tacatcaact	cagagtcaac	2160
aaaatgtact	gagtgggcac	agtcagcaaa	catctctacc	cagtcagaca	cagagcactc	2220
ttacagcccc	actgtataac	actatgggtga	tttctcagcc	tgcagccgga	agcatgggtcc	2280
agattccatc	tagtatgcc	caaaacagca	cccagagtgc	tgcagtaact	acattcactc	2340
aggacaggca	gataagattt	tctcaagggtc	aacaacttgt	gaccaaatta	gtgactgctc	2400
ctgtagcttg	tggggcagtc	atgggtacct	gtactatgct	tatgggccag	gtggtgactg	2460
catatcctac	ttttgctaca	caacagcaac	agtcacagac	attgtcagta	acgcagcagc	2520
agcagcagca	gagctcccag	gagcagcagc	tcacttcagt	tcagcaacca	tctcaggctc	2580
agctgaccca	gccaccgcaa	caattttttac	agacttctag	gttgctccat	gggaatccct	2640
caactcaact	cattctctct	gctgcatttc	ctctacaaca	gagcaccttc	cctcagtcac	2700
atcaccagca	acatcagttc	cagcaacagc	agcaactcag	ccggcacagg	actgacagct	2760
tgcccgaacc	ttccaagggt	caaccacagt	agcacacgtg	cttcctctct	tgacatcaag	2820
ggaggaaggg	gatggcccat	taagagttac	tcagatgacc	tgaggaaagg	agggaaagtt	2880
ccagcagttt	catgagatgc	agtattgagt	gttctagttc	ctggaattag	ttggcagaga	2940
aaatgctgcc	tagtgctaca	gatgtacatt	aaataccagc	cagcaggagg	tgatcatagg	3000
ggcacagcca	gttctgacag	tgttttaggt	gcctggatat	tttttgatgg	aaaaagaata	3060
tattgccaaa	tattaagaag	ctcagctatg	aatgacctc	cagggaatca	gaaaggcact	3120
aatgatgtta	gtaactttta	gtgggtctgt	gcctcttata	aagtgttaca	gaggacatac	3180
cactgccatg	tcaggggttt	gcttacagtg	atgccatgaa	gacagtcacg	tagacttggt	3240
agcgaccccc	ttccccaacc	cctctccctt	ttcagataat	gatggaacag	taattacttt	3300
cagaatgttg	tgtgggttca	aattctctat	gtacagatga	tgtaaaaata	tgtatatgtc	3360
tagataaaaag	gagagaaaagc	aaaacatttt	gtatgctgca	tgaaagcggt	atctcttcct	3420
tacaggtgtg	agcacctttc	ctgaaattct	gacaccatgt	gcaaactgat	ccatcctgtt	3480
tttccttttg	tttacaacac	agtagtggtc	tgttcacttt	tccggggcac	aagttttttt	3540
gttcataact	tggtctgtgat	gtcacagttt	gttcagtgag	gtatgatgtg	ctgctgggaa	3600
tggaattttt	tttttcaggt	taaattattg	atacaacagg	attttcaagt	tattcagaaa	3660
tatccctcat	ttcattattt	ttcaattatg	tttgaaaata	ggatttgcac	tgctttattt	3720
taggtggctg	ggagttttga	ttgcataatt	tgttatagtt	catagttgga	aatatttgcg	3780
taaatgggtt	tcaacaagcc	tgaaagtaat	ttcaagaatg	tttcagttat	agaggtaaaa	3840
tttgcacaca	aaacatctta	ggcacttttt	aacattctca	atcatgggaa	ttttaacttt	3900
tgggatttgt	tgaaatcttt	tttattatcc	ttcacaattt	caatgcttct	tttagtcaga	3960
aatgattcag	ggttatttga	ggggaaaaaa	ccccatagtg	ccttgatttt	aattcagggtg	4020
ataactcacc	atcttgaagt	cattgtccgg	tttccgtagc	agttttgaaa	ccttagtacc	4080
tttttaacag	catgtgggtg	tcagtgtcat	tattagtctc	ctaataagtt	cctctgaaga	4140
ctgctatcag	tctcttggtg	tggagttaca	aataatttag	aaataaaaaga	tgataacctt	4200
acactatcat	agttattaat	gtgatcctaa	aattgtttcc	taaatcagca	tttttcttta	4260
gtcattttaag	aattttaccag	aaatatttgc	tcaatatgat	cttgatatcc	ctacaaagaa	4320
aaaagaaggg	gtagggtatt	ggctatgcct	tcactacaac	attagaatat	tgtaactcac	4380
atgccttcta	aacgtgaact	aagatttcct	ttggcaatat	catattctaa	aagtaataaa	4440
ttccaataca	agttacatac	atttaaaaaa	cattttacag	attttatggt	actaatgaaa	4500
tttacagtga	tagaacaaaa	gaggattagt	agaaaataca	ttattagaat	ataaaaaaatg	4560
ttattactga	ggaaagggag	gagaggacaa	gtgtaataaa	tcaaaattga	cctcaaaaaga	4620
aaatgtgtaa	cagagttgag	gttggttaaaa	cagaaaaggt	tctgaataat	gaagattaac	4680
ctaatgcaga	attgctaggt	aaagaggtca	ggggaatgct	aagccagttc	ttaagacttc	4740
tctgtcctct	gctttgctgt	tatccttaag	gcatatactt	tgtctttctg	cagaaaattc	4800
tacctggcta	caattacttt	gaacattaat	gttgaaaaag	aaaacaacca	aagaaaattg	4860

gtacttaccc	ttctacaaaa	gaagtgtgac	tagatatcaa	tcagtaatta	acatatcaag	4920
gagctcttct	agctaaatga	ccatccagta	gagatttccc	acattcccat	gaatatcaag	4980
aatagttgtc	agaatatgta	tgtacctgag	catatgtaca	cagacaaggg	ggatgttgtg	5040
gaatatggca	atagcattgt	tcttctcccc	tttcaaattg	cctttcttga	ccttatgcca	5100
ttccatatat	atctgagttg	tgcctcattt	atttattggc	aatacctagt	gatacggatt	5160
tagctaacaa	aagatatgaa	gaactattat	attgaggcct	gtcctctaca	taccacactt	5220
aaaagatggg	gaactgtgag	tactacttag	gttgacagca	acaaagcata	agacaagccc	5280
caggtaaacg	tctaaactgt	ttactcacat	tgtcctactc	cagccccttc	aattatttcc	5340
catctccaca	aatagtcggg	ggaaaaaatt	aaaattttcc	tttatgattc	ttactgttct	5400
tcgcagctca	tcttttcctg	cttagaatta	accattgcta	atttaaagga	gcagctagct	5460
gcttttctgt	cagtctgaag	cgtagtagtg	gaagaggtag	taagcaccag	ctgcctcttt	5520
gctgctttgt	tttcctcctg	attctcttaa	atttgggttg	caaagctatc	ccgcccccca	5580
ccctgcccc	tgaaacttga	gcattcaaat	gaagattcag	cagtgtctgt	tcttcatttc	5640
tatagccaaa	gctgttagtt	aaaatcccaa	atctatagca	tttaaagata	ccaaatagaa	5700
acaccttcca	gcttt					5715

<210> 2
 <211> 846
 <212> PRT
 <213> HOMO SAPIENS

<400> 2

Met	Leu	Phe	Thr	Val	Ser	Cys	Ser	Lys	Met	Ser	Ser	Ile	Val	Asp	Arg	1	5	10	15
Asp	Asp	Ser	Ser	Ile	Phe	Asp	Gly	Leu	Val	Glu	Glu	Asp	Asp	Lys	Asp	20	25	30	
Lys	Ala	Lys	Arg	Val	Ser	Arg	Asn	Lys	Ser	Glu	Lys	Lys	Arg	Arg	Asp	35	40	45	
Gln	Phe	Asn	Val	Leu	Ile	Lys	Glu	Leu	Gly	Ser	Met	Leu	Pro	Gly	Asn	50	55	60	
Ala	Arg	Lys	Met	Asp	Lys	Ser	Thr	Val	Leu	Gln	Lys	Ser	Ile	Asp	Phe	65	70	75	80
Leu	Arg	Lys	His	Lys	Glu	Ile	Thr	Ala	Gln	Ser	Asp	Ala	Ser	Glu	Ile	85	90	95	
Arg	Gln	Asp	Trp	Lys	Pro	Thr	Phe	Leu	Ser	Asn	Glu	Glu	Phe	Thr	Gln	100	105	110	
Leu	Met	Leu	Glu	Ala	Leu	Asp	Gly	Phe	Phe	Leu	Ala	Ile	Met	Thr	Asp	115	120	125	
Gly	Ser	Ile	Ile	Tyr	Val	Ser	Glu	Ser	Val	Thr	Ser	Leu	Leu	Glu	His	130	135	140	
Leu	Pro	Ser	Asp	Leu	Val	Asp	Gln	Ser	Ile	Phe	Asn	Phe	Ile	Pro	Glu	145	150	155	160
Gly	Glu	His	Ser	Glu	Val	Tyr	Lys	Ile	Leu	Ser	Thr	His	Leu	Leu	Glu	165	170	175	
Ser	Asp	Ser	Leu	Thr	Pro	Glu	Tyr	Leu	Lys	Ser	Lys	Asn	Gln	Leu	Glu	180	185	190	
Phe	Cys	Cys	His	Met	Leu	Arg	Gly	Thr	Ile	Asp	Pro	Lys	Glu	Pro	Ser	195	200	205	
Thr	Tyr	Glu	Tyr	Val	Lys	Phe	Ile	Gly	Asn	Phe	Lys	Ser	Leu	Asn	Ser	210	215	220	
Val	Ser	Ser	Ser	Ala	His	Asn	Gly	Phe	Glu	Gly	Thr	Ile	Gln	Arg	Thr	225	230	235	240
His	Arg	Pro	Ser	Tyr	Glu	Asp	Arg	Val	Cys	Phe	Val	Ala	Thr	Val	Arg	245	250	255	
Leu	Ala	Thr	Pro	Gln	Phe	Ile	Lys	Glu	Met	Cys	Thr	Val	Glu	Glu	Pro				

			260					265					270			
Asn	Glu	Glu	Phe	Thr	Ser	Arg	His	Ser	Leu	Glu	Trp	Lys	Phe	Leu	Phe	
		275					280					285				
Leu	Asp	His	Arg	Ala	Pro	Pro	Ile	Ile	Gly	Tyr	Leu	Pro	Phe	Glu	Val	
	290					295					300					
Leu	Gly	Thr	Ser	Gly	Tyr	Asp	Tyr	Tyr	His	Val	Asp	Asp	Leu	Glu	Asn	
305					310					315					320	
Leu	Ala	Lys	Cys	His	Glu	His	Leu	Met	Gln	Tyr	Gly	Lys	Gly	Lys	Ser	
				325					330					335		
Cys	Tyr	Tyr	Arg	Phe	Leu	Thr	Lys	Gly	Gln	Gln	Trp	Ile	Trp	Leu	Gln	
			340					345					350			
Thr	His	Tyr	Tyr	Ile	Thr	Tyr	His	Gln	Trp	Asn	Ser	Arg	Pro	Glu	Phe	
		355					360					365				
Ile	Val	Cys	Thr	His	Thr	Val	Val	Ser	Tyr	Ala	Glu	Val	Arg	Ala	Glu	
	370					375					380					
Arg	Arg	Arg	Glu	Leu	Gly	Ile	Glu	Glu	Ser	Leu	Pro	Glu	Thr	Ala	Ala	
385					390					395					400	
Asp	Lys	Ser	Gln	Asp	Ser	Gly	Ser	Asp	Asn	Arg	Ile	Asn	Thr	Val	Ser	
				405					410					415		
Leu	Lys	Glu	Ala	Leu	Glu	Arg	Phe	Asp	His	Ser	Pro	Thr	Pro	Ser	Ala	
			420					425					430			
Ser	Ser	Arg	Ser	Ser	Arg	Lys	Ser	Ser	His	Thr	Ala	Val	Ser	Asp	Pro	
		435					440					445				
Ser	Ser	Thr	Pro	Thr	Lys	Ile	Pro	Thr	Asp	Thr	Ser	Thr	Pro	Pro	Arg	
	450					455					460					
Gln	His	Leu	Pro	Ala	His	Glu	Lys	Met	Val	Gln	Arg	Arg	Ser	Ser	Phe	
465					470					475					480	
Ser	Ser	Gln	Ser	Ile	Asn	Ser	Gln	Ser	Val	Gly	Ser	Ser	Leu	Thr	Gln	
				485					490					495		
Pro	Val	Met	Ser	Gln	Ala	Thr	Asn	Leu	Pro	Ile	Pro	Gln	Gly	Met	Ser	
			500					505					510			
Gln	Phe	Gln	Phe	Ser	Ala	Gln	Leu	Gly	Ala	Met	Gln	His	Leu	Lys	Asp	
		515					520					525				
Gln	Leu	Glu	Gln	Arg	Thr	Arg	Met	Ile	Glu	Ala	Asn	Ile	His	Arg	Gln	
	530					535					540					
Gln	Glu	Glu	Leu	Arg	Lys	Ile	Gln	Glu	Gln	Leu	Gln	Met	Val	His	Gly	
545					550					555					560	
Gln	Gly	Leu	Gln	Met	Phe	Leu	Gln	Gln	Ser	Asn	Pro	Gly	Leu	Asn	Phe	
				565					570					575		
Gly	Ser	Val	Gln	Leu	Ser	Ser	Gly	Asn	Ser	Ser	Asn	Ile	Gln	Gln	Leu	
			580					585					590			
Ala	Pro	Ile	Asn	Met	Gln	Gly	Gln	Val	Val	Pro	Thr	Asn	Gln	Ile	Gln	
		595					600									

Gly	Ala	Val	Met	Val	Pro	Ser	Thr	Met	Leu	Met	Gly	Gln	Val	Val	Thr
			725						730						735
Ala	Tyr	Pro	Thr	Phe	Ala	Thr	Gln	Gln	Gln	Gln	Ser	Gln	Thr	Leu	Ser
			740						745						750
Val	Thr	Gln	Gln	Gln	Gln	Gln	Gln	Ser	Ser	Gln	Glu	Gln	Gln	Leu	Thr
			755						760						765
Ser	Val	Gln	Gln	Pro	Ser	Gln	Ala	Gln	Leu	Thr	Gln	Pro	Pro	Gln	Gln
			770						775						780
Phe	Leu	Gln	Thr	Ser	Arg	Leu	Leu	His	Gly	Asn	Pro	Ser	Thr	Gln	Leu
									785						800
Ile	Leu	Ser	Ala	Ala	Phe	Pro	Leu	Gln	Gln	Ser	Thr	Phe	Pro	Gln	Ser
									805						810
His	His	Gln	Gln	His	Gln	Ser	Gln	Gln	Gln	Gln	Gln	Leu	Ser	Arg	His
									815						830
Arg	Thr	Asp	Ser	Leu	Pro	Asp	Pro	Ser	Lys	Val	Gln	Pro	Gln		
			820						825						
			835						840						845